COMMON SYSTEMS
PRIVATE LINE CIRCUIT
ARRANGED FOR USE WITH MACHINE RINGING AND 24 OR 48 VOLT CENTRAL OFFICE BATTERY

CHANGES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 Adjustment E was added for the 114EB relay

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The tripping range table formerly read as follows:

TRIPPING RANGES

System	(TP) Relay	Type of Ringing	District	Voltage Limits: Ringing Int. A-C	Ringing Int. D-C	Silent Int. D-C	Freq. in Cycles	Max. Ext. Ckt. Loop: Ringing Int.	Max. Ext. Ckt. Loop: Silent Int.	Max. Capacity on Line	Adjustment	Rating
Crossbar, Manual, Panel, or Step by Step	114KA	AC-DC	Semi-Sel.	84-88	46-52	46-52	20	1000Ω	1000Ω	4 M.F.	D	M.D.
								1500Ω	1500Ω	2 M.F.	C	Std.
		Super-imposed	Full-Sel.	84-88	37-40	46-52	20	1000Ω	1000Ω	4 M.F.	D	M.D.
								1500Ω	1500Ω	2 M.F.	C	Std.
Manual	114AK	A-C		75-87		42-59	20	450Ω	870Ω		A	A&M Only
				80-92.5		42-59	20	450Ω	805Ω			
				85-98.4		42-59	20	450Ω	745Ω			
				90-104.2		42-59	20	450Ω	695Ω			
				95-110		42-59	20	450Ω	650Ω			
	114EA	AC-DC	Semi-Sel.	95-103	16-19	42-59	20	800Ω	750Ω			
				84-88	46-52	46-52	20	1350Ω	800Ω			
		Super-imposed	42A	64-80								
				72-80	42-46	60-75	20	800Ω	725Ω			
				84-88	37-40	60-75	20	800Ω	725Ω			
			42A Inverted	64-80								
				72-80	42-46	60-75	20	860Ω	875Ω			
			Mixed	72-88								
				80-88	30-34	60-75	20	700Ω	800Ω			
Panel	114AK	A-C		95-110		46-52	20	450Ω	730Ω			
		AC-DC	Semi-Sel.	95-103	16-19	46-52	20	800Ω	730Ω			
				84-88	46-52	46-52	20	1350Ω	800Ω			
	114EB	Super-imposed	Full-Sel.	64-80								
				72-80	42-46	60-75	20	970Ω	850Ω			
				84-88	37-40	60-75	20	970Ω	850Ω			
Step by Step	114EA	AC-DC	Semi-Sel.	72-88								
				80-88	46-52	46-52	20	1350Ω	800Ω			
				84-88	46-52	46-52	20	1350Ω	800Ω			
	114EB	Super-imposed	Full-Sel.	64-80								
				72-80	42-46	60-75	20	970Ω	850Ω			
				84-88	37-40	60-75	20	970Ω	850Ω			

System	(TP) Relay	Type of Ringing	District	Voltage Limits			Freq. in Cycles	Max. Ckt.	Ext. Loop	Max. Capacity on Line	Adjustment	Rating
				Ringing Int.		Silent Int.		Ringing Int.	Silent Int.			
				A-C	D-C	D-C						
Manual	114EA	AC-DC	Semi-Sel.	95-103	16-19	42-59	20	950ω	950ω	2 M.F.	B	M.D.
				84-88	46-52	46-52				2 M.F.	B	M.D.
		Superimposed	42A	64-80	42-46	60-75				2 M.F.	B	A&M Only
				72-80								
				84-88	37-40							
			42A Inverted	64-80	42-46							
				72-80								
			Mixed	72-88	30-34							
				80-88								
Panel	114AK	AC-DC	Semi-Sel.	95-103	16-19	46-52	20	950ω	950ω			
				84-88	46-52							
	114EB	Superimposed	Full-Sel.	64-80	42-46	60-75						
				72-80								
				84-88	37-40							
Step by Step	114EA	AC-DC	Semi-Sel.	72-88	46-52	46-52	20	950ω	950ω	2 M.F.	B	M.D.
				80-88								
				84-88								
	114EB	Superimposed	Full-Sel.	64-80	42-46	60-75				2 M.F.	B	A&M Only
				72-80								
				84-88	37-40							
Manual	114EA	AC-DC	Semi-Sel.	84-88	42-52	60-75	20	950ω	950ω	2 M.F.	B	A&M Only
Manual	114EA	AC-DC	Semi-Sel.	95-103	16-19	42-59	20	650ω	525ω	2 M.F.	E	A&M Only
				84-88	46-52	46-52		850ω	600ω	2 M.F.	E	
Step by Step	114EA	AC-DC	Semi-Sel.	72-88	46-52	46-52	20	850ω	600ω	2 M.F.	E	
				80-88								
				84-88								

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3330-HGWB-FJS-ZO

COMMON SYSTEMS
PRIVATE LINE CIRCUIT
ARRANGED FOR USE WITH MACHINE RINGING
AND 24 OR 48 VOLT CENTRAL OFFICE BATTERY

CHANGES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 Adjustments E was added for the 114EA Relay (B apparatus).

C.2 Test note 1 and the asterisks at the tripping relays were removed.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Added the tripping range data shown for adjustment E and rated "Manufacture Discontinued", the items under adjustment B that they replace.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350-HGWB-JLD

COMMON SYSTEMS
PRIVATE LINE CIRCUIT
ARRANGED FOR USE WITH MACHINE RINGING
AND 24 OR 48 VOLT CENTRAL OFFICE BATTERY

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Cross-connections, Figs. 1N, 2N, 1M, 2M & 3M were changed.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350

EAK)
RSW) VA

COMMON SYSTEMS
PRIVATE LINE CIRCUIT
ARRANGED FOR USE WITH MACHINE RINGING AND 24 OR 48 VOLT CENTRAL OFFICE BATTERY

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 On Issue 5-D the following data were added to the tripping range table an item per column as follows:

Manual 114EA, AC-DC, Semi-Sel, 84-88, 42-52, 60-75, 20, 950ω, 950ω, 2 mf, B, A.&M. Only.

All other headings, No Change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 332

HGWB)
RSW) SL

COMMON SYSTEMS
PRIVATE LINE CIRCUIT
ARRANGED FOR USE WITH MACHINE RINGING
AND 24 OR 48 VOLT CENTRAL OFFICE BATTERY

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Reference to the crossbar system was added to the 114KA relay section of the tripping range table.

D.2 Formerly the designation at the ringing leads of Fig. 1 read "To Machine Ringing in Manual or Panel Office, See Note 102".

D.3 Formerly circuit note 102 read: Provide one lead from "MR SUP-" or "MR R1" bus bar equipped with one 1/2 ampere or one 1-1/3 ampere fuse per ten circuits in manual or panel office. Provide 1/2 ampere fuse when the ringing current is supplied by a 1/2 ampere ringing machine.

D.4 Formerly note 104 read: Furnish "X" wiring and apparatus in manual offices having switchboard No. 11. Furnish "Y" wiring in panel or step-by-step office or manual offices having switchboards other than No. 11.

D.5 Figs. 1L, 3K, 4K, 1K and 2K were rated Mfr. Disc.

D.6 Figs. 1M, 3M, 4M, 1N and 2N were added.

All other headings, No Change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 332

HGWB)
RSW) PP

COMMON SYSTEMS
PRIVATE LINE CIRCUIT
ARRANGED FOR USE WITH MACHINE RINGING AND 24 OR 48 VOLT CENTRAL OFFICE BATTERY

CHANGES

B. CHANGES IN APPARATUS

B.1	Superseded	Superseded By
	.02 mf (R)	.25 mf (R)

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Prior to Issue 3-D the .02 mf condenser (R) was not designated E apparatus.

D.2 The .25 mf condenser (R) designated F apparatus was added.

D.3 Circuit Note 107 was added.

All other headings, No Change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 332

HGWB)
RSW) FN

COMMON SYSTEMS
PRIVATE LINE CIRCUIT
ARRANGED FOR USE WITH MACHINE RINGING AND 24 OR 48 VOLT CENTRAL OFFICE BATTERY

CHANGES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 Formerly the third line of the circuit requirements table for the 114KA relay (TP) read Test 26 MA and Readjust 25 MA.

C.2 Formerly the first and second line of the remarks column of the circuit requirements table read "1000 ohm external circuit loop - D - 4 mf. maximum capacity on line."

C.3 Formerly the third and fourth lines of the remarks column of the circuit requirements table read "1500 ohm external circuit loop - D - 2 mf. maximum capacity on line."

C.4 DC adjustment data and references to adjustment A in the remarks column were added for the 114AK, 114EA and 114EB relays (TP).

C.5 Formerly test release values for the (S1) and (S2) relays were 4.5 MA.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Formerly the "maximum capacity on line" column of the tripping range table was shown as the remarks column.

D.2 Formerly all items for the 114KA relay in the rating column of the tripping range tables were rated standard.

D.3 The "adjustment" column of the tripping range table was added.

D.4 The lower manual panel and step-by-step items of the tripping range table were added.

All other headings under "Changes", no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is used to provide transmission battery to stations on a private line to automatically signal one of the stations when the receiver is removed from the switchhook at the other station, and to give an audible ringing tone to the calling station as an indication that the called station is being signalled.

2. WORKING LIMITS

2.1 Supervisory and tripping requirements are specified in tables shown on the circuit drawing.

3. FUNCTIONS

3.1 To provide 24 or 48 volt transmission battery.

3.2 To automatically signal the called station.

3.3 To automatically trip machine ringing.

3.4 To furnish audible ringing tone signal to the calling station.

3.5 To prevent clicks in the calling subscribers receiver due to a line discharge when the called subscriber answers.

3.6 To protect the resistance lamps against power surges.

4. CONNECTING CIRCUITS

4.1 Individual subscriber's line circuit.

DESCRIPTION OF OPERATION

5. When a bridge is connected across the line to station No. 1 or the two-way trunk, the (S1) or (S3) relay operates in turn operating the (R2) relay under control of the (RS) and (TP) relays. The (R2) relay operated, operates the (R3) relay and connects ringing current to the line to ring station No. 2 or the trunk. The (R3) relay operated closes the circuit to pass audible ringing tone to station No. 1 by means of ringing current through the (R) condenser. This indicates to the calling station that the called station is being signalled. The (R3) relay operated also connects resistances in parallel with the windings of the repeating coil to prevent clicks in the calling subscriber's receiver due to line discharges when the called subscriber answers.

When station No. 2 removes the receiver from the switchhook, relay (TP) operates and removes the short circuit from the (RS) relay permitting it to operate in series with relay (R2). The operation of relay (RS) short-circuits

and releases the (R2) relay and the (RS) relay locks under control of the (S1) or (S3) relays. When the (R2) relay releases the (R3) relay releases and the (S2) or (S4) relay operates. The (R3) relay released removes the resistances from the repeating coil and also opens the (R) condenser from the line. The (R3) relay is slow in releasing to insure discharge of the line capacity before the resistances are removed from the windings of the repeating coil. The (S2) or (S4) relay operated, closes a supplementary path to hold the (RS) relay operated. When a similar call is originated from station No. 2, the operation is the same as described above except that the (S2) or (S4) and (R1) relays operate initially in place of the (S1) or (S3) and (R2) relays.

"X" wiring and apparatus is furnished to meet the requirements of the tripping relay test circuit for the No. 11 switchboard. For other switchboards "Y" wiring is furnished. When the receiver at either station is replaced on the switchhook, the associated supervisory relay releases. No other relays release, however, until the receiver at the other station is replaced on the switchhook. This releases its associated supervisory relay and the (RS) relay restoring the circuit to normal.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 332

HGWB)
RSW) QW